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Factors Influencing the Implementation of a Point-of-Care Screening Tool for Delirium

Beth Ann Swan, Julie Becker, Rickie Brawer, and Christopher N. Sciamanna

Delirium is under-recognized and not documented by nurses in over 85% of patients who are delirious (Milisen et al., 2002). Nurses play a critical role in assessing risk for delirium because they provide 24-hour care and see the patient in a variety of circumstances (Fong, Tulebaev, & Inouye, 2009; Foreman, 1991; Inouye, 2000). Failure to recognize delirium can lead to serious adverse events, including increased hospital length of stay, falls, urinary tract infections, restraint use, new nursing home placement, serious morbidity, and mortality (Galanakis, Bickel, Gradinger, Von Gumpfenberg, & Forstl, 2001; Inouye, Rushing, Foreman, Palmer, & Pompei, 1998; Kiely et al., 2009; Olofsson, Lundstrom, Borssen, Nyberg, & Gustafson, 2005). Interventions are needed at the point of care to assist nurses in recognizing delirium (Agostini, Baker, Inouye, & Bogardus, 2001; Inouye et al., 2005; Lemiengre et al., 2006), and enable them to make timely intervention with evidence-based care strategies to enhance patient safety and minimize adverse events. In an evidence report published by the Agency for Healthcare Research and Quality, interventions were identified to manage delirium in hospitalized older adults (Agostini et al., 2001). However, nurses first must be able to recognize delirium in order to implement these evidence-based interventions. The purpose of this qualitative study was to examine the factors that might influence the computerized implementation of the Confusion Assessment Method (CAM), a delirium screening tool for nurses at the point of care on three orthopedic units (Inouye et al., 1990).

Given the ample evidence delirium in hospitalized older adults is under-diagnosed and not recognized by nurses up to 85% of the time, interventions are needed at the point of care to assist nurses in recognizing delirium. In this qualitative study, factors that might influence the implementation of a point-of-care screening tool for delirium were examined.

Review of the Literature

Postoperative delirium is associated with negative impact on short-term and long-term quality of life. Studies examining the quality of care of postoperative older adults found increased rates of adverse events in delirious patients compared to patients without delirium. For example, incidence of falls, restraint use, pressure ulcers, urinary tract infections, and new nursing home placement, as well as hospital length of stay, was significantly greater in patients with delirium (Kiely et al., 2009; Olofsson et al., 2005; Rudolph et al., 2005).

In addition, delirium can persist beyond an older adult's hospital discharge. In 40%-95% of older adults with hospital-acquired delirium, symptoms of delirium persisted at the time of discharge and in some instances continued for up to 6 months (Bogardus et al., 2003; Inouye et al., 1998; Kiely et al., 2009).

This contributes to the poor functional recovery of older adults up to 1 year after hospitalization (Kiely et al., 2009; Marcantonio, Flacker, Michaels, & Resnick, 2000). Thus, delirium screening and management are critical to providing quality care to older adults following surgery.

Point-of-care screening for delirium by nurses is only good if management strategies can be implemented for a positive result. Once postoperative delirium is detected, care strategies known to be effective in reducing morbidity provide supportive measures and continuous assurances to alleviate anxiety, and manage symptoms associated with delirium (Lemiengre et al., 2006; Milisen et al., 2001). Nurses are positioned strategically to have a positive effect on the quality of care of older adults with postoperative delirium. Nurse observations are critical for the early detection of delirium symptoms and their continuous monitor-

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ing (Inouye, Foreman, Mion, Katz, & Cooney, 2001). Nurses also are positioned ideally to observe subtle changes at an early stage pre-operatively and continuously postoperatively (Foreman, 1990).

Methods

Using qualitative descriptive methods, researchers examined the feasibility of incorporating the CAM into a hospital-based electronic medical record and evaluated the facilitators and barriers to full integration of this computer screening tool into the care provided by nurses at the point of care on three units where patients are admitted following elective and emergency orthopedic surgery. The literature supports the efficacy of screening for delirium by geriatricians. However, no studies have explored the impact of delirium screening with the CAM by bedside nurses at the point of care. This study incorporated the CAM with score alert system into a hospital-based electronic medical record for use by bedside nurses at the point of care. The convenience sample comprised two focus groups ($n=5$ and $n=10$), representing a 30% participation rate of all nurses in the three study units. Bedside nurses who would interact with the system at the point of care on all three shifts on three orthopedic inpatient units were recruited to participate in focus group discussions. The units were selected because the majority of the patients are age 65 or older, and the potential for reducing negative events related to delirium by computerized screening may have significant impact on clinically important outcomes. The focus groups met for up to 1.5 hours and included dinner, and participants were given a merchandise card from a food vendor in appreciation for their time and input. The first focus group was smaller and participants were older than the second group. Although nurses registered for the two sessions, not all nurses who volunteered for the focus groups attended.

Focus Groups

All participants were encouraged to participate fully in focus group discussions. Questions incorporated three broad areas: familiarity with use of screening tools, knowledge and attitude toward the patient population, and impressions of the CAM tool. Facilitators and co-investigators developed a discussion guide (including questions and prompts), which was revised several times to assure questions were value-neutral. Exploratory guidelines included the following:

- Information needs of nurses to screen, recognize, and manage delirium in postoperative older adults
- Information on how nurses would use the CAM delirium screening intervention in direct clinical care, working through screen shots
- Presentation format and organization of information of the computer screens provided to nurses
- Identification of how nurses currently perceive, process, screen, identify, and manage delirium in older adults following elective hip and knee surgery
- Identification of nurses' expectations for using the CAM as part of routine clinical care for screening and managing delirium during hospital stays of older adults following elective hip and knee surgery
- Verification the system has or allows for checks to ensure information on screening for delirium is correct
- Confidence of the nurses in capability to use the system and in the system itself for screening for delirium
- Control by nurses over system operations, particularly information entered into and retrieved from the system
- Determination the system is easy to use and can be used quickly
- Verification by nurses the system and its outputs are understandable

Focus group discussions were led by the same person to assure stan-

dardization across the two groups; were recorded using audiotapes; and augmented by notes taken by another researcher. Because the focus groups used a semi-structured interview format, the facilitators asked questions and then used specific probes to gain additional information or clarity. Examples of follow-up questions included, "What do you mean by that?" and, "Okay, can you give me an example?"

Analysis

Focus group discussions were audiotaped, transcribed, and analyzed using congruence and memoing (Birks, Chapman, & Francis, 2008). In addition, the facilitators' initial comments from a short debriefing conducted at the end of each focus group, as well as their notes from the focus groups, were used. *A priori* themes were identified through the development of the focus group questions. Additional subthemes were established as part of the analysis.

Results

Four themes emerged from the focus groups: (a) proficiency with computers, (b) familiarity with using screening tools, (c) knowledge of and attitude toward older adult patients, and (d) impressions of the CAM.

Proficiency with Computers

Asked about their comfort using computers, participants indicated confidence and competence because computer systems required "less writing" or had "less errors. More clear. You don't have to decipher what the doctors are writing." However, participants noted the lack of charting facilities and the availability of working computers. In addition, not every computer contained the software required to use the screening tools or chart patients' progress, which created specific concerns.

Familiarity with Using Screening Tools

Participants discussed the use of three routine screening tools: the

Braden Scale for Predicting Pressure Sore Risk, the Morse Fall Scale, and the Universal Pain Scale. These scales are part of *LastWord*®, a database used by nurses at the point of care to chart patient information (GE/IDX *LastWord IDX*, was the original name used by developer PHAMIS for the current GE Centricity Enterprise product). Use of the database was taught to nurses during basic education and in orientation on the unit ("self explanatory"). Almost all nurse participants were comfortable using the scales and recording results electronically via the computerized system with prompts. Because these scales require qualitative assessments and do not have identified inter-rater reliability, "Some people get one thing, and you can get another." Some participants indicated the questions in the scales were too vague, resulting in a "we know it when we see it" type of assessment ("We kind of know what to look for...We find something, we just go on that"). Many believed the computer system prompted "...what you need to look for and what you need to score. If you're real busy, would you miss that if it didn't prompt you? I like them (on-line screening tools)." The majority of participants thought computer prompts for on-line screening tools assisted them in patient care. However, one participant noted that an 88-year-old and a 21-year-old patient might have the same score for fall risk, and suggested the older patient would need much more assistance due to frailty and other possible health conditions.

Knowledge of and Attitude Toward the Older Adult Patients

Participants described their patients as "geriatric." While the average patient was a 63-year-old female who elected to have surgery, participants perceived the average age is increasing because more patients are electing to have surgery such as knee arthroplasty. When asked to characterize their patients, participants described them as independent or desiring independence, "being set in their ways," and being "resistant to change," thereby requiring the nurse

to be adaptable and flexible. To manage treatment and adapt to this independent trait, several participants talked about the importance of practicing "diplomacy" by presenting the patients with a "plan" for the day. The plan was described as:

...what will happen throughout the day, that a physical therapist is going to come in, the doctor is coming really early in the morning, kind of make it better for them...Most of them will question [the plan]. And the thing about that is that you must be on the money, though, when you present this plan because if you don't, they're going to say, "But you said..." So you have to pretty much, you know, be able to work what you're doing.

Because most of the surgeries are elective, many patients have "done their homework before they've come in and they know what to expect," and can be more demanding. Participants identified the idea of a plan as a way to gain cooperation from the patient, provide structure for the hospital stay, and make the stay less threatening or confusing.

Participants described their older patients as less fearful of hospital routines or medical procedures than younger adults, but they indicated they needed to talk slower and louder to older patients. Participants indicated they needed to "watch" and monitor older patients more carefully, especially because of the perception older patients are at greater risk for falls and medication side effects. Almost all participants felt comfortable with older adults, and believed their assistance was both needed and appreciated by older patients.

One of the focus groups discussed the challenge of medication reconciliation prior to entry into the hospital, specifically "their meds [need to be] straightened out before they came in." Participants indicated some patients did not disclose their medication or substance use history fully during the initial interview with the nurse practitioner during the admission process.

I find the first screening they ask all the past medical history questions and they really don't go into the drugs, mental history. And that's when we find that doctors say 2 weeks before surgery, "Stop your meds." They were taking Ativan® or they were taking pain medication for 2 years and all of a sudden they stop. Some people with DTs go get hospitalized, they just don't understand what would happen if they stop these meds. No one really teaches them. So when they go to this PAT department and the nurse practitioner asks them these questions, they don't really go in that they were drinking a six-pack a day or taking these meds routinely for so long. So unfortunately, postop we see the signs and symptoms, but we had no clue.

Often omitted by patients were analgesics or mental health medications. This omission may impede patient recovery and often surprised focus group members. Also, the lack of medication coordination among health care providers was mentioned as a barrier to patient recovery. A participant described a situation in which a patient was prescribed the same analgesics from two different doctors at different doses. Not until the patient was in excruciating pain was the nursing staff able to intervene and try to reconcile the differences in the prescriptions while the patient was in the hospital and "suffering." Another identified complicating factor was the designation of the orthopedic surgeon as the primary physician; other chronic conditions, such as mental health or cardiovascular disease, may not be addressed because they were not within the expertise of the orthopedist.

Most participants also believed working with confused or delirious older adults presented significant challenges, such as more precautions to insure safety and avoid falls, the disconcerting experience of dealing with screaming and aggressive patients, and overall increased staff anxiety. As one participant described,

Do you feel like it's challenging when they're postop night, climbing out of bed and you can't – you're just, like, looking at them and trying to explain, like, you have to lay here and they're looking at you and they're, like, "No, I'm getting out of bed" and trying to bite you and trying to like, you know, screaming and hollering, and you just feel so bad because you can't get it across to them, like, you're in the hospital, you need to be safe, you need to – I think it's definitely hard in that when they're not combative, but when they're aggressive.

Another participant acknowledged, "...it's hard to even sometimes keep calm in a situation... when you're getting hit and there was somebody that was biting and whatever, throwing things, it's hard." Participants generally agreed caring for a confused or delirious patient made for "not a good day" or a "long day." Members of Focus Group 1 noted their patients' behavior changed in the evening and with "changes in atmosphere, changes in light." They noted being in unfamiliar surroundings or settings may affect behavior.

Impressions of the CAM

Participants in each focus group were asked to look at the CAM and provide immediate feedback. The first focus group's response was that the tool was similar in format to other screening tools and would not be difficult to implement. In fact, they indicated the tool was largely self-explanatory and in-service training would not be needed for implementation. They thought the CAM could be incorporated easily into the existing computer system through some additional prompts in the software.

Unlike the first focus group, members of Focus Group 2 expressed some concerns with potential implementation of a computerized CAM. This focus group raised three issues: (a) the lack of a defined baseline; (b) intake procedures to assess mental status; and (c) labeling a patient and

the CAM's impact on possible admission to a rehabilitation facility. Several of the nurses noted there often was no baseline regarding mental status because family members may be unaware of their relative's mental health status. Alternately, the patient may live alone with no one who regularly sees him or her able to assess baseline mental status. This lack of patient history may influence care when a patient displays confused behavior, resulting in unnecessary medical interventions. ("...3 days later they say, after we've run 800 tests and worked them up for everything possible," there is no significant change in mental status). To address this concern, nurses suggested admission procedures to assess mental status. Prior to admission, a mental health status check is not performed routinely; nurses thought mental status assessment would be a difficult "judgment call" with no defined baseline. Some nurses noted morphine and other drugs may cause patients to seem confused, or confusion could occur after discontinuation of a drug. This observation raised the question of a patient's customary mental state vs. confusion as the result of a drug interaction. Finally, this focus group raised concerns about how labeling patients as confused or aggressive may impact their admission to a rehabilitation facility. That is, if a person was assessed as confused using the CAM, would he or she be denied admission to a rehabilitation facility after acute care hospitalization?

While members of Focus Group 1 thought this tool could be implemented easily, members of the second group did not agree. They identified barriers to implementation, such as nurses' knowledge of delirium, the tool's redundancy with existing screening tools (especially pain management tools), patient labeling, and a general resistance to additional work responsibilities (particularly among younger participants). This group thought this tool would be "hard" to implement for several reasons: (a) difficulty in assessing mental status because nurses have not met the patients prior to

their postoperative hospital stay and this "population is always on medication, sedation" to manage their pain from surgery; (b) the perception that diagnosing patients for delirium cannot be done by nurses because nurses cannot or should not make diagnoses; (c) labeling patients as having delirium may influence discharge planning or their acceptance into a rehabilitation program; and (d) nurses already recorded this information through other tools, especially pain management assessments.

So if we were to utilize this particular tool and whatever adjustments were made to it, I don't – I would like to know what we would do different for our patients because our patients are all basically labeled high risk for falls. They get q 1 hour checks by the nurses. There are people constantly in and out of their rooms. I don't know that there's anything that we could do different to, I guess, intervene for the patient. I don't see what we would do differently with the patient other than label them confused.

Screening patients' mental status prior to hospital admission to determine a baseline was identified as a key component of potential implementation of the CAM. Anecdotally, one participant cited a patient who came in "fully oriented:"

This would just be perfect for her but – she's an older adult, infection, and she started hallucinating and by the time, most of the time she was with it, and you would never [know]. You don't see it. So [with] this on the chart, [it might help the] nurse because you try to get it in a report but sometimes it can be missed so I could see that.

Participants thought this tool would add unnecessary work: "The more paperwork we do, the less nursing you do. I think we do enough paperwork." Both focus groups agreed it was important to address operational terms, including defining *baseline* and *delirium*. Mem-

bers of Focus Group 1 indicated an in-service training program was not necessary for CAM implementation, but participants in Focus Group 2 thought an in-service training conducted by a nurse (preferably a nurse practitioner), rather than a doctor or other health professional, would be most helpful.

I think an in-service from maybe a nurse practitioner that deals with geriatric patients in that area and is able to say, well, these are some of the reasons these things happen and what you should look for prior to this happening. And then rather than get to that point, we can stop it in advance. I think that would be beneficial. [It would be helpful] to hear from different people's health at different times. Some people will say older people don't do well with Darvocet®. They don't do well with Benadryl®. They don't do well with this and yet we continue to, in our practice, administer this to elderly people. And I think if that was in place to start with, we'd have a better practice to begin with the patient.

Discussion

Computer-based screening tools are a routine part of nursing care provided on these three units in an urban hospital. The inclusion of a computer-based CAM could be advantageous provided several aspects are addressed. First, participants identified the need for operational definitions of confusion and delirium prior to implementation. Second, better patient histories are needed to allow nurses to ascertain mental health status and use of substances, such as alcohol, tobacco, or antidepressants. Baseline screening to assess mental health status should be encouraged prior to hospital admission and should become part of patients' medical records. Third, participants were concerned that an assessment of confusion or delirium would impede patients' access to rehabilitation facilities. This must be addressed and procedures developed to insure appropriate patient service-

es. Finally, resources need to be identified and implemented for the units so all computers use the same software, access to computers is readily available, charting can occur in a secure site, coordination between providers regarding medication and treatment is improved, and overall unit efficiency is increased as a result of the additional screening tool.

Future research should include the use of personal digital assistants to assist in prompting assessment and recording results of tools such as the CAM. These devices could be used at the patient's bedside and could access parts of the patient record to assist nursing staff in assessment and treatment. Participants also suggested decreasing redundancy among tools. Further research may combine questions from similar tools to decrease redundancy of assessment and improve direct patient care. **MSN**

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